

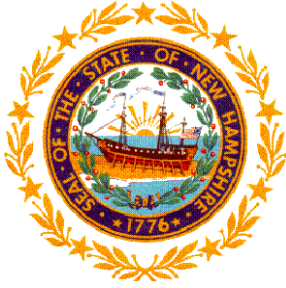
**NEW HAMPSHIRE  
DEPARTMENT  
OF  
ENVIRONMENTAL SERVICES**

**SOLID WASTE REPORT  
TO THE LEGISLATURE 2005**

**September 2006**







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**September 2006**  
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## 2005 SOLID WASTE REPORT TO THE LEGISLATURE

### A. Generation of Solid Waste in New Hampshire

Total waste generation in New Hampshire in calendar year 2005 is estimated at 1,845,969 tons, including residential and commercial sources and construction/demolition (C&D) debris. Residential and commercial/industrial generation (excluding C&D waste) decreased about 0.5 percent over the previous year. Separately, residential generation was about 791,678 tons, an increase of 8.8 percent over the previous year, and commercial/industrial waste (602,028 tons) decreased by 9.9 percent from 2004. C&D wastes totaled 402,602 tons, a decrease of 10.9 percent over 2004. (See C&D discussion below.)

Generation of waste is derived from information reported in the Annual Facility Report, which is required by rule of all solid waste facilities, and through informal surveys of a sampling of commercial industrial generators for whom no reporting is required.

**Table 1: Generation of Solid Waste (Tons) in New Hampshire in 2005**

Source of waste	2001	2002	2003	2004	2005
Residential	752,524	730,516	712,738	727,920	791,678
Commercial/industrial	615,400	591,973	657,636	723,230	651,689
Construction & Demolition	256,648	238,001	326,942	451,750	402,602
Total Tonnage	1,624,572	1,560,490	1,697,316	1,902,900	1,845,969

Source: NHDES/SWTAS, 2006

The national per capita generation rate, as reported in 2003 by EPA, was 4.5 pounds/person/day of residential and commercial/industrial waste. New Hampshire's rate for 2005 was 6.0 pounds/person/day. The per capita rate is likely higher due to the influence of tourism. The State of Maine sees a similar trend and has data that shows the summertime increase in waste disposal. For C&D, the daily per capita rate was 1.7 pounds. Overall, each resident of the state was responsible for the generation of 2,801 pounds of waste during the year. Maine also reported a per capita rate of 8.66 pounds per person per day including C&D. This correlates with New Hampshire's rate of 7.7 pounds per day, including C&D.<sup>1</sup> The USEPA estimates that nationwide, each person is responsible for approximately 2000 pounds per person per year.

### B. Disposal of Solid Waste in New Hampshire

In 1990, the New Hampshire Legislature adopted a hierarchy of preferred methods for solid waste management. From most to least preferred, they are: source reduction; recycling and reuse; composting; waste-to-energy technologies (including incineration); incineration without resource recovery; and landfilling.

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<sup>1</sup> Maine State Planning Office, *2003 Solid Waste Generation and Disposal Capacity Report to the 122<sup>nd</sup> Legislature*, December 2004.



## 1. Residential and Commercial Waste

Table 2 depicts the Department of Environmental Services (DES) estimates for management of residential and commercial wastes in New Hampshire. These estimates are derived from two main sources, the most important being the Annual Facility Report mentioned above. These reports tell DES the amount of waste handled by transfer stations/recycling centers, incinerators and landfills. The information includes residential and commercial solid waste. However, the two cannot be accurately separated because most facilities manage both kinds of waste without distinction. No reporting is required of waste haulers. Many towns have mixed services, with residents either using the town-run facility or contracting with a hauler to remove their trash. In many cases where a contract hauler is used, the trash goes directly to a disposal facility with no attempt at recycling. Data from this sector would greatly assist DES in determining diversion rates and in directing technical assistance, but there is no statutory authority to require submittal of this information. Many states regulate the haulers, requiring both licensing and mandatory recycling.

<b>Table 2: Management of Residential and Commercial Solid Waste in 2005 (excluding Construction and Demolition Debris and Imported Wastes)<sup>2</sup></b>		
<b>Disposal/Diversion</b>	<b>Amount In Tons</b>	<b>Percentage</b>
Commercial Recycling	305,450	21.16%
Residential Recycling	124,985	8.66%
<b>Total Recycling</b>	<b>430,435</b>	<b>29.82%</b>
Commercial Composting	12,311	0.85%
Residential Composting	22,870	1.58%
<b>Total Composting</b>	<b>35,181</b>	<b>2.44%</b>
Waste To Energy In NH	235,803	16.34%
Incineration w/o recovery	4,320	0.30%
Landfilling	638,305	44.22%
<b>Disposal Total</b>	<b>878,429</b>	<b>60.86%</b>
<b>Exports</b>	<b>99,322</b>	<b>6.88%</b>
<b>Totals</b>	<b>1,443,367</b>	<b>100.00%</b>
<i>Construction and Demolition</i>	<i>402,602</i>	<i>Shown in order to reconcile this table and Table 1 above</i>
<i>Total Waste</i>	<i>1,845,969</i>	

Source: NHDES/SWTAS, 2006

<sup>2</sup> New Hampshire uses USEPA criteria for determining recyclable materials in order to maintain consistency with other state and federal reporting entities. Because C&D is not included in the USEPA criteria, it is excluded from this table. Inclusion of imported waste would skew the recycling numbers. It is assumed that the imported waste has been subject to recycling efforts in its state of origin.



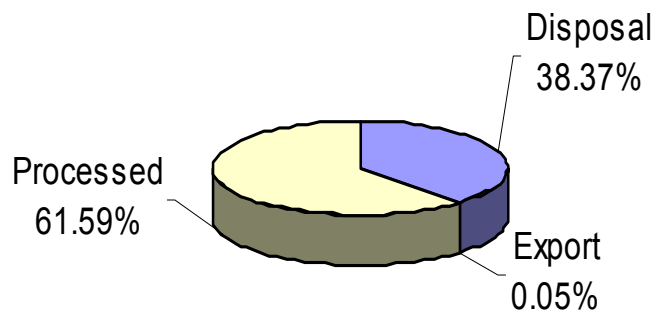
## 2. Construction & Demolition Debris

Figure 1 shows that 62 percent percent, or 371,681 tons, of the construction and demolition debris was processed in 2005. Wastes that are processed are altered to a usable form, such as wood chips, which can then be used as alternative daily cover at landfills. The waste can also be salvaged for reuse, such as concrete for fill or road base. The remaining 38 percent was disposed of in landfills (231,532 tons) or exported (277 tons).

There was a marked 10.8 percent decrease in the amount of C&D materials generated in the state in 2005. New Hampshire had a 16.6 percent increase in the number of residential building permits issued in 2004 over 2003. There was also a significant increase in the number of commercial permits. In short, 2004 was a boom year for the construction industry. Data obtained from the Home Builders and Renovators of NH

Association for the period August 2004 through August 2005 indicate that the number of permits issued declined by 15.4 percent during the period and the decline continued through June 2006. The reduction in C&D can be linked to a reduction in renovation projects and new construction. In last year's report, it was projected that we would see a decrease in the amount of C&D in 2005 based on the decline in building permits.

**Figure 1 Management of C&D Waste 2005**



Imported C&D was 198,723 tons, primarily from Massachusetts. Only 13,917 of this went directly to a landfill, the remaining majority being processed through one of the recyclers. Massachusetts has placed a ban on the landfilling of C&D, starting July 1, 2006. The ban will restrict all concrete, brick, wood, metals and asphalt from entering a Massachusetts landfill until they have passed through a recycling center. There may be an effect on C&D imports to New Hampshire as a result of this action. Massachusetts DEP and NH DES will be sharing information on the disposal and recycling of C&D in order to understand the effects of the ban.

The State of Maine passed Legislative Document (LD) 141 which reads, in part: "The substitution of wood from construction and demolition debris for conventional fuels used in a boiler may not exceed 50 percent of total fuel by weight combusted on an average annual basis." Maine has a number of wood fired electric plants and this new law will affect the mix of wood used by them. Again, this may affect the amount of C&D imports to New Hampshire as this outlet in Maine for the material is restricted.

Construction and Demolition debris will continue to be an issue for New Hampshire and the United States. USEPA estimates are that approximately 210 million tons of C&D are generated each year in the United States from both residential and commercial sources. Table 3 below lists a number of uses for C&D waste. It is instructive to look at the

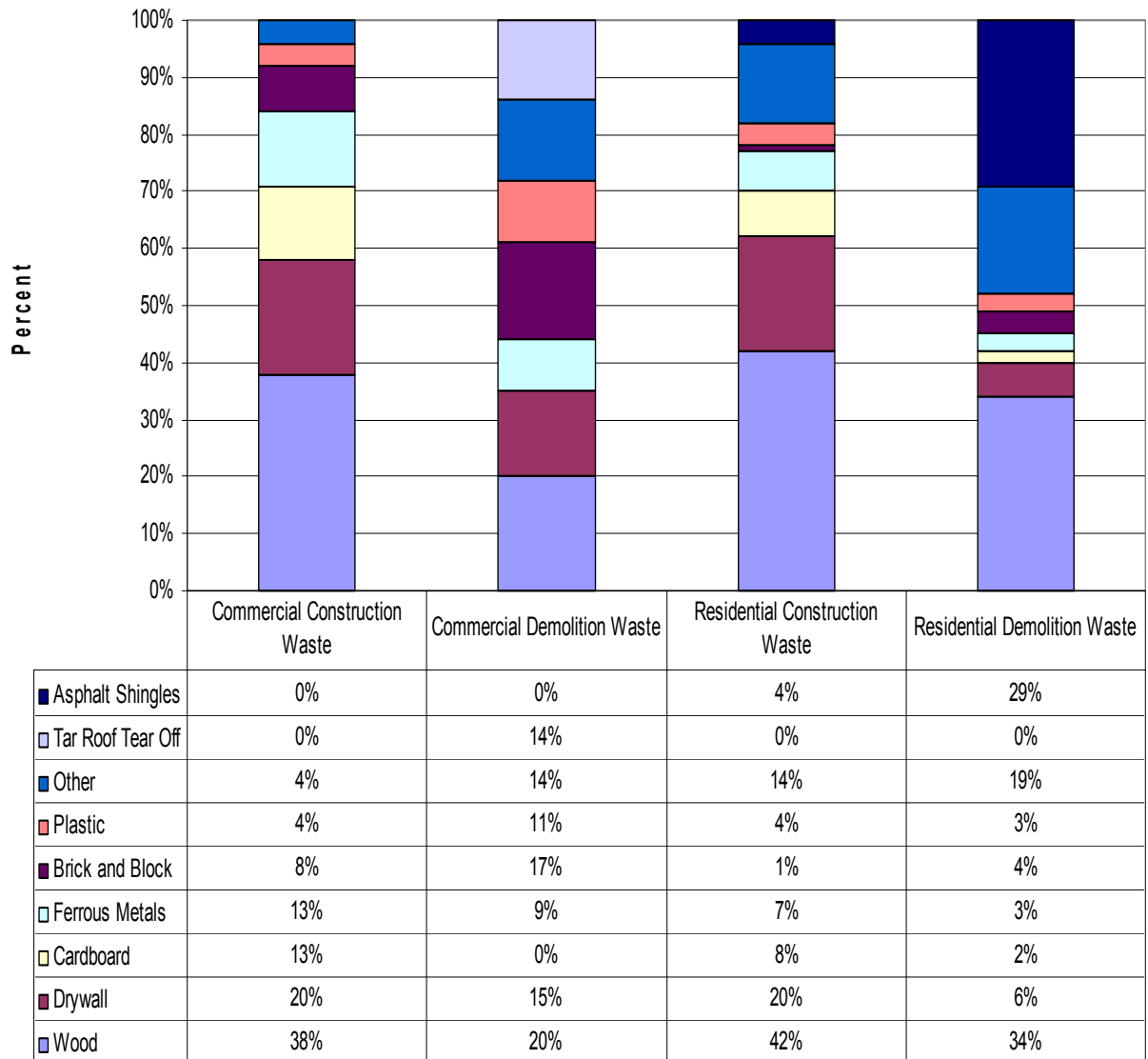


distribution of materials in the waste stream to understand the markets for the material.  
(Figure 2 and Figure 3)

<b>Table 3 – Potential Uses for C&amp;D Materials</b>	
<b>Material</b>	<b>Potential Use</b>
Asphalt	Road sub-base fill
Concrete	Crushed and mixed to make new asphalt cement blocks; crushed and screened aggregate can be used in asphaltic concrete
Dirt	Landscaping landfill cover
Metal	Scrap metal dealers
Wood	Timber/wood pulp: shredded for fuel, animal bedding, landscaping, manufactured building products, and compost
Brick	Masonry crushed for ornamental stone
Glass	Fiberglass insulation, sand blast, aggregate in asphalt reflective beads
Gypsum	Soil amendment, gypsum board, absorbent media
Plastic	ABS: plastic lumber, PVC: highway barriers, Polyethylene: traffic cones
Polystyrene	Insulation
Porcelain	Crushed for aggregate
Corrugated Cardboard	Paper mills, fuel pellets
Carpet	Landfill cover
Roofing Shingles	Asphalt paving



Figure 2- C&D Distribution



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<sup>3</sup> Camp, Dresser & McKee Inc., "Quantity and Composition Study of Construction and Demolition Debris in Wisconsin," Prepared for the Wisconsin Recycling Market Development Board, February 1998.



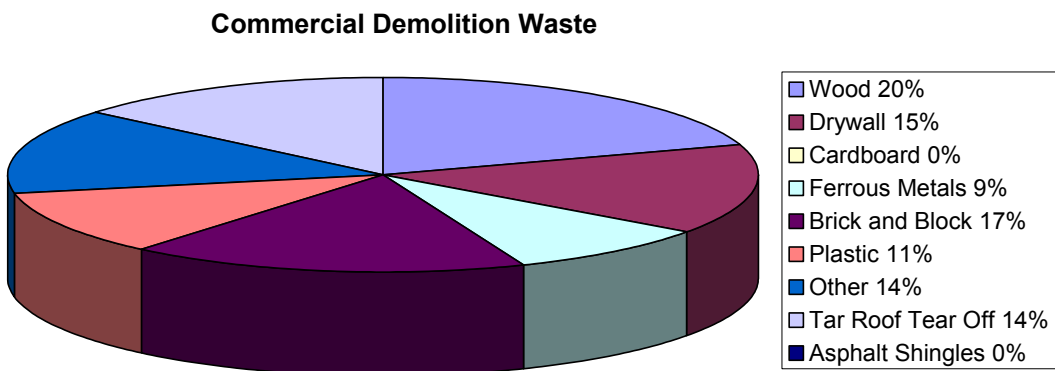
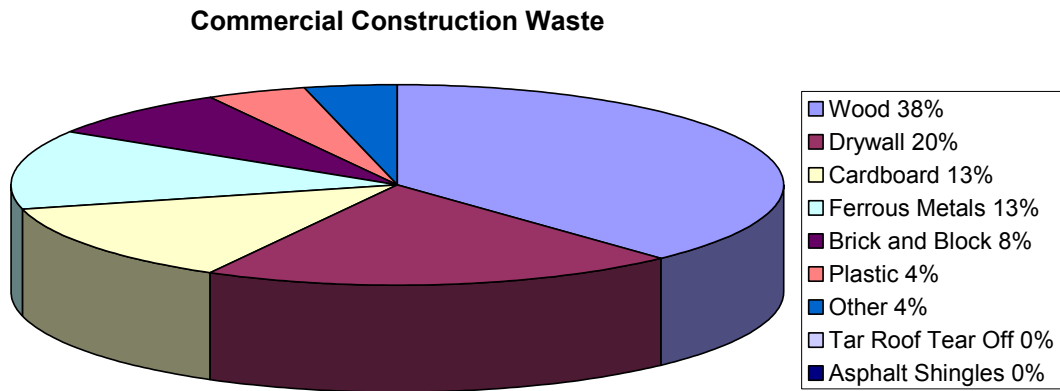


Figure 3 – Construction and Demolition Waste Composition



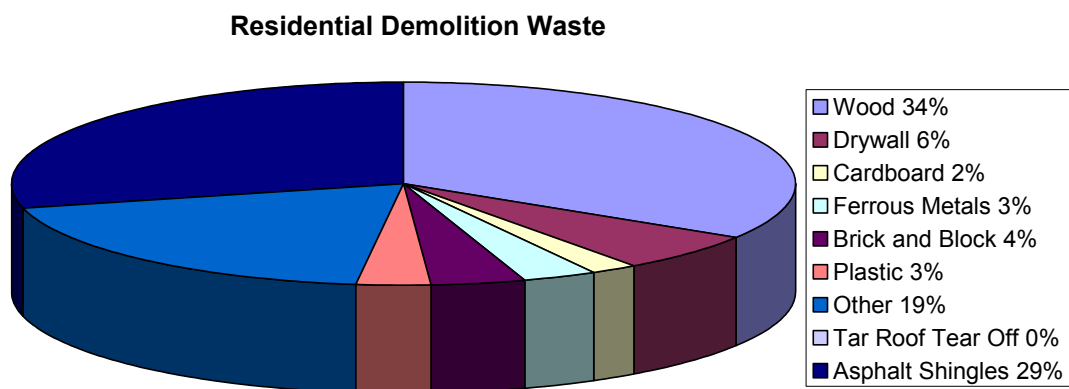
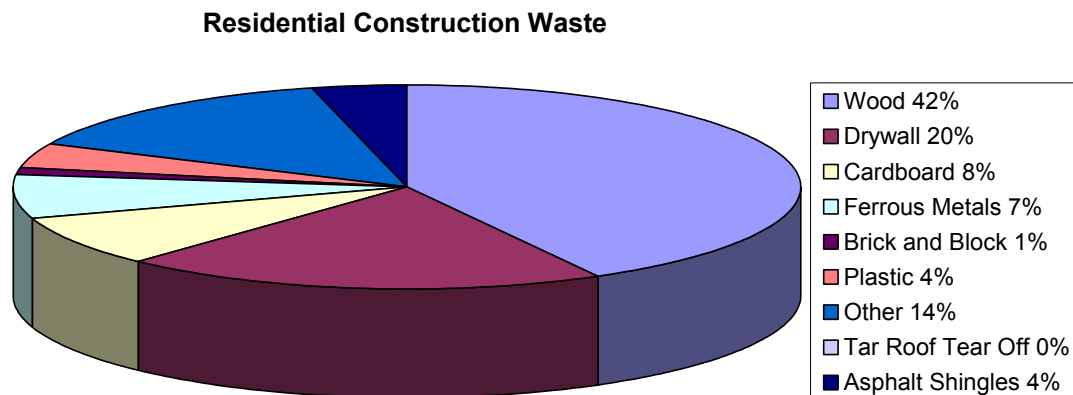


Figure 3 (continued) – Construction and Demolition Waste Composition



Of interest is that wood is only between 20 to 42 percent of the waste stream, depending on the source. Commercial demolition only generates 20 percent wood and residential demolition only 34 percent, each lower than the corresponding sector's construction waste. Approximately 43 percent of all C&D waste generated comes from residential construction and demolition, the remaining 57 percent from commercial sources.<sup>4</sup>

Lead-based paint(LBP) is found throughout our nation's building infrastructure and can be present in any residential home built before 1978, the year its use was banned. Heavily leaded paint was used in about one-third of homes constructed before 1940, about half the homes constructed between 1940 and 1960, and to a lesser extent until 1978, when lead content was limited to a maximum of 0.06 percent in any consumer product. With over 100 million housing units in the United States, two-thirds of the existing housing stock potentially contains LBP-coated material. As our building infrastructure ages, many of these buildings will reach the end of useful life and will need to be replaced or remodeled.<sup>5</sup> It should be noted that only painted wood has the potential for lead contamination. This would likely be siding and trim, not the heavy framing materials. So, by weight, the amount of LBP wood is not high. A recent, peer reviewed article indicates that the penetration of lead into the wood is less than 0.06 inches (1.6 mm).<sup>6</sup> This would indicate that, under controlled circumstances, even LBP wood can be recycled. Certainly, like most waste materials, C&D recycling can be done only if there is a profitable market for the derived products.

### **C. Projected Solid Waste Management Capacity Needs**

The goal of solid waste capacity analysis is to evaluate long-term supply and projected demand. This involves projecting how much waste will be generated and how much permitted capacity is available in landfills and incinerators to dispose of that waste. This determination is complex due to the variety of factors that influence the estimate, such as population, growth, economic climate, the level of diversion of the waste stream, and levels of imports. However, for the purposes of determining "Public Benefit," or need for additional capacity, RSA 149 M:V prohibits the inclusion of imports.

During the period 1989-2002, there were additions to disposal capacity in the state that approximated disposal volumes. Thus, for that period, supply and demand for disposal capacity were in approximate balance. Although the majority (75 percent) of capacity additions was developed by the private sector, in 2003 the department approved a solid waste permit modification for expansion of the Mount Carberry landfill in Berlin. The Androscoggin Regional Refuse Disposal District purchased the landfill in December of 2002. In 2004, Mount Carberry increased its disposal of C&D from 39,804 to 114,000 tons. Mt. Carberry, for 2004, received a total of 139,630 tons of waste in addition to 98,000 tons of waste paper fiber from the Fraser Paper mill. With the closing of the mill in 2006, this capacity may become available for Municipal Solid Waste (MSW). The department also approved a permit expansion for the North Country Environmental Services landfill in Bethlehem. However, the future of the expansion is

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<sup>4</sup> USEPA Report No. EPA530-R-98-010, "Characterization of Building-Related Construction and Demolition Debris in the United States," June 1998.

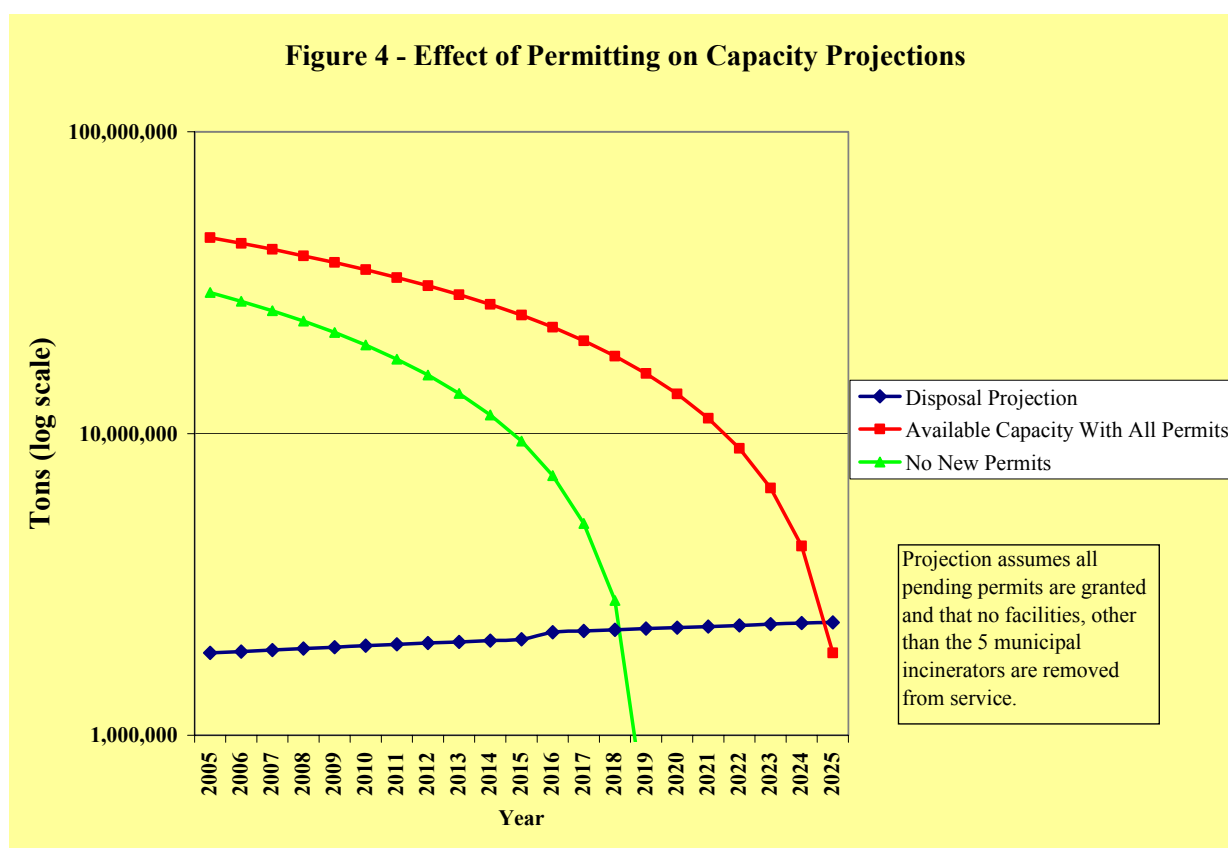
<sup>5</sup> Robert H. Falk., John J. Janowiak, Stephen D. Cosper, and Susan A. Drozd, "Remilling of salvaged wood siding coated with lead-based paint. Part 1. Lead exposure," Forest Products Journal, Vol. 55, Issue 7/8, July/August 2005

<sup>6</sup> Ibid.



currently being considered in the courts with the most significant recent development being that the court has voided a part of the of Town of Bethlehem’s restrictive ordinance as discriminatory.

In-state, permitted disposal capacity is projected to be adequate for residential and commercial solid waste until 2019 (see Figure 4). Waste Management, Inc. has submitted a proposal for permit modification for its Turnkey facility in Rochester and sufficient land for expansion is available at the site. Proposed Turnkey Phases 9-14 would add 12,000,000 cubic yards of capacity for approximately 9,240,000 tons of MSW. This would lengthen the life of the facility by just under 9 years based on current disposal rates. The DES Waste Management Division permit for this application has been approved and the complete permit to expand is pending approval by the Air Resources Division (ARD). Figure 4 reflects this permit for expansion as approved. Note that the Turnkey facility, Androscoggin Valley Landfill, and the two waste-to-energy incinerator facilities are likely to be the only facilities operating in 2025 and their combined capacity is not adequate for the state.



The City of Nashua has asked for a waiver to increase the city-owned Four Hills landfill’s capacity. If the Nashua waiver request is approved, it would add about 300,000 tons per its application. This would give Nashua another 3.5 years of disposal capacity.

Other major private providers of disposal capacity are the two Wheelabrator waste-to-energy incinerators in Concord and Claremont. (Wheelabrator is a subsidiary of Waste Management, Inc.) The New Hampshire/Vermont Compact, which uses the Claremont incinerator, expires in



2008. The 14 towns in Vermont, representing 22,000 tons, do not plan to renew the contract. That capacity will become available for use by NH towns or for commercial use. There is additional municipal landfill capacity in Conway, Lebanon, Unity, and Farmington with a combined disposal of about 45,000 tons per year. The unlined landfill in Colebrook was reopened in 2005. It is receiving about 20,000 tons per month and has, as of April 2006, 20 months remaining capacity at that fill rate.

Further, there are five small municipal incinerators left in the state. Together, these have approximately 5,000 tons of capacity per year. Four of the incinerators are reaching end of life and will require substantial rebuilding, at significant cost, to remain in operation. In addition, USEPA air emission standards issued in December 2005 will require the installation of expensive air emission controls and it may not be cost effective for these towns to recondition and add controls to comply with the standards. DES is required by EPA to issue air emission rules for these facilities by December 2006 that must match or exceed the EPA requirements.

A permit application for a new landfill in Canterbury for use by the Concord Cooperative, which sends its MSW to the Wheelabrator facility in Penacook, was submitted but was withdrawn in August 2006. This landfill would have replaced the Franklin ash landfill which is scheduled to close in 2009. Wheelabrator Concord, which uses the Franklin ash landfill, generates about 61,000 tons of ash each year. There is sufficient capacity at other landfills to absorb this material. However, transportation costs for the ash will likely increase.

No other permit applications for new landfills have been received by the department. Figure 4, above, also shows the effect of all pending permits being granted. This will increase the state's ability to provide adequate disposal capacity until 2025, an additional six years. The assumptions used in the projection are:

1. No change in recycling rate
2. No increase or decrease in the amount of waste disposed of by individuals
3. All permits are granted as written as of June 2006
4. No facilities are taken out of service except the five small municipal incinerators
5. No imported waste is included in the disposal projections (imports will shorten projections by approximately four years at current rates.)<sup>7</sup>

The department has developed documents and spreadsheets to assist permit applicants in demonstrating a need for capacity in the state. Using this information allows the department to evaluate capacity demonstrations in a consistent, approved format. The information may be found at [www.des.state.nh.us/swtas](http://www.des.state.nh.us/swtas) or can be obtained by contacting the Solid Waste Technical Assistance Section at 271-3713.

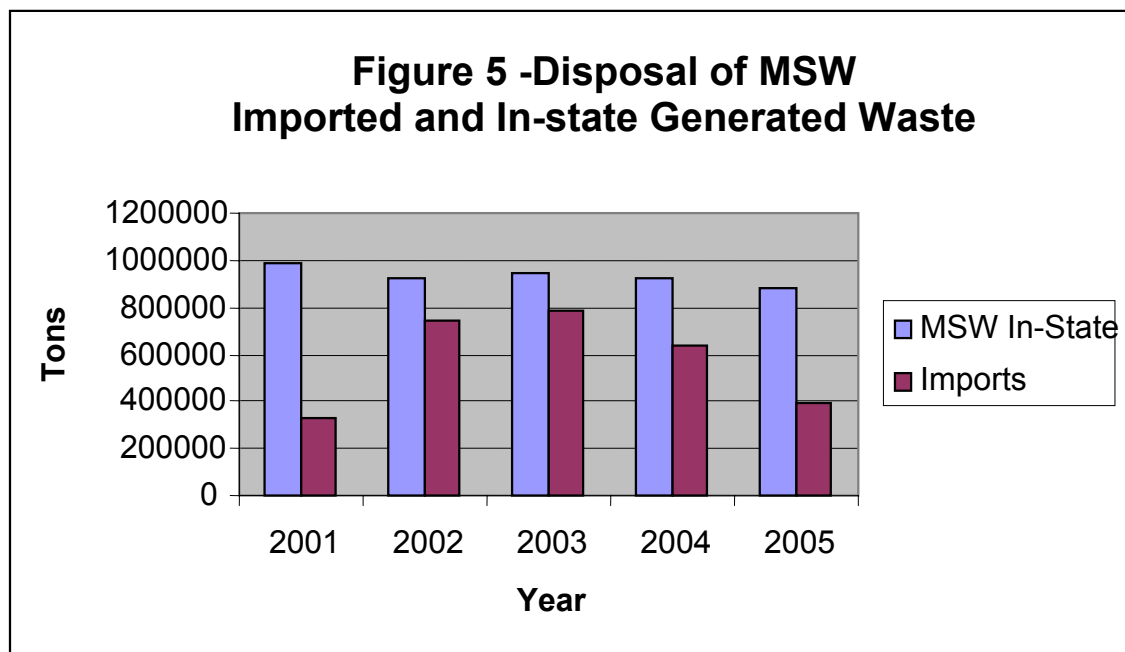
Figure 5 compares New Hampshire's disposal of waste from in-state to waste imported from other nearby states. Imports are and will continue to be an important factor in projecting solid waste disposal capacity, barring federal legislation allowing states to limit interstate waste shipments. The level of imports decreased in 2005 to 395,422 tons, which is 38.3 percent less tonnage than the previous year. The majority of the imports were disposed at the Turnkey

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<sup>7</sup> By state RSA, imports are not to be included in capacity projections.



Landfill in Rochester and it is this facility that had the significant decline in imports. State law prohibits imports from being included in capacity projections.



#### **D. State and Regional Trends in Solid Waste Management**

##### **1. Recycling Rate**

Nearly 99 percent of the state's population, representing 228 of the state's 234 communities, has access to recycling. In most towns, citizens can recycle a variety of materials, but in others, it may be only a few materials. The tonnage of materials collected for recycling has increased from 40,000 tons in 1990 to 465,616 tons in 2005. This includes commercial and residential recycling and composting.

In 2005, the state experienced a decrease in recycling and compost tonnages. The end result is a decrease in state recycling from 31.4 to 29.8 percent. The primary reason for the decrease was a marked reduction in the amount of steel and iron recycled. Prices for scrap steel continue to increase, reaching \$394 a ton in June 2006 (Source: London Metals Exchange data). Asian demand will likely maintain high recycling rates for metals. The high prices in 2004 resulted in a clean out of stockpiles and the decrease in steel recycling is due primarily to this, not a diminished demand for the commodity. Reported residential recycling rates went up slightly in 2005 but the decrease in commercial recycling more than offset this.

Residential recycling, as reported by the municipal facilities, went up in 2005, but overall the rate is only about 18.1 percent. There are facilities that report recycling rates as high as 71 percent and several facilities that either do not recycle or have very low rates, typically less than 5 percent. Only by virtue of the high commercial recycling rate, particularly for metals,



is the state rate at 29.8 percent. Unfortunately, the state has not met the goal in RSA 149-M:2 of a 40 percent diversion.

Table 4 provides the tons of recyclables by type collected by the municipalities. The increases in paper, glass, and cans are noteworthy. There has been a decrease in separated plastics with a concomitant increase in commingled containers. In order to decrease the cost of separation, a number of facilities have gone to single or dual stream recycling rather than having to maintain separate bins for each type of material. Single or dual stream allows local facilities to avoid the cost of equipment and personnel used to separate materials. Rather, materials are sent to larger material recovery facilities and separated with automated equipment. The category “Other” shows an extreme variation but it includes a number of recyclables, such as tires, batteries, and shingles, that can show wide variation in recovery rates.

<b>Table 4 – Municipal Recycling Tonnages</b>			
	<b>2004</b>	<b>2005</b>	<b>% Difference</b>
Paper	47,459	49,798	4.9%
Glass	8,145	10,533	29.3%
Cans	2,457	3,351	36.4%
Plastics	1,840	1,712	-7.0%
Commingled Containers	9,645	9,913	2.8%
Textiles	926	728	-21.4%
Electronics	1,531	1,463	-4.4%
Scrap Metal	27,061	23,170	-14.4%
Other	5,295	19,636	270.8%
<b>Total</b>	<b>104,358</b>	<b>120,304</b>	<b>15.3%</b>

The amount of available material actually recovered for several types of recyclables is listed in Table 5. By way of explanation, the USEPA estimates that 35.2 percent by weight of the waste stream is paper and paper based materials. New Hampshire generated 791,678 tons of solid waste from residential sources. Therefore, 278,670 tons of paper were theoretically available for recycling. Of this, only 49,798 tons or 18 percent of the recoverable paper was actually recycled. By the same method, only 13 percent of the recoverable plastic was recycled. These are two of the areas where municipalities and the state should be concentrating their efforts. Nationally, 49.5 percent of all paper produced is recovered in 2004. This is primarily due to industrial and commercial recycling. Predicated on adequate funding, there are any number of ways to increase the recycling of paper, primarily through public information campaigns such as utility bill inserts or direct mail, radio, TV, newspaper, magazines, billboards, and other media, city or county websites and local presentations, door hangers or other delivery to each household and contests, recognition, and other incentive programs. Encouraging municipal facilities to adopt single point recycling for all paper, thus making it very easy for residents, can also provide rapid increases in the amount of paper recovered.



**Table 5 –NH Recyclables Recovery**

<b>Item</b>	<b>Amount of Available Material in NH Actually Recovered</b>
Paper	18%
Glass	24%
Metals	42%
Plastics	13%

Plastics recycling can also be boosted by collecting all plastics rather than just polypropylene and high density polyethylene. While these two types currently have the most value, the other types of plastic, including Styrofoam, can be used as filler material in engineered products such as plastic lumber. Again, public education and simplicity of recycling can increase the yield.

Recycling reduces costs in two ways. First is cost avoidance. Material that is not landfilled or incinerated incurs no transportation cost to or disposal fee at the facility. Second, there is the inherent value of the material. Table 6 lists the market price for some recyclables as of July 21, 2006, as reported by Recycler's World magazine. While it is certainly no more than a snapshot in time, it does show that there is a market for many different materials, some of which have substantial value. A number of these items are at all time highs, particularly metals and paper.

There is great opportunity for increasing recycling within the state. Many municipalities continue to aggressively pursue recycling, while others are not as active or have no recycling programs at all. Those towns and cities that have embraced recycling have implemented programs that have propelled them to diversion rates higher than their neighbors'. There are many programs that will help to increase recycling and other diversion, but one of the most successful is Pay-As-You-Throw (PAYT). There are 41 NH communities that employ this system that charges residents a volume or weight based fee to dispose of their solid waste. Several more are considering this option, including Hopkinton, Webster, Newport, Boscawen, and Rindge. This system encourages citizens to compost in their backyards and to become waste-conscious consumers. Because recycling is basically free to residents in PAYT communities, there is a real incentive to separate the recyclables from the remainder of the trash. The DES Solid Waste Technical Assistance Section provides outreach programs on PAYT and will work with any municipality that is interested in implementing this program.

Virtually every town and city in the state has a transfer station or recycling center. What keeps them from recycling more is often the inability to invest in equipment and structures to prepare materials for market and to preserve its value while awaiting market. For example, used beverage cans are worth \$0.28 per pound loose and \$0.77 per pound baled (7/21/06 market reports). But, while baling of materials can increase the value, not every town has the ability to purchase a baler nor do they have the ability to protect the baler and bales from the



elements. It would be in a town's long term financial interest to develop cooperative agreements with surrounding towns to establish central consolidation facilities that would have both equipment and storage capacity. At the very least, town highway vehicles could transport the material to the consolidation facility and the town would avoid the tipping fee. DES does not have grant funds available for the purchase of equipment or construction of buildings for the purpose of increasing recycling.

<b>Table 6 - Market Price of Recyclables as of July 21, 2006</b>		
<b>Item</b>	<b>Market Price USD \$</b>	<b>Per Unit</b>
Old Corrugated Cardboard	80	Ton
#8 News	77	Ton
Magazines	90	Ton
Mixed Paper	40	Ton
Mixed Office	115	Ton
PETE Plastic	0.10	Pound
HDPE Plastic – natural	0.28	Pound
HDPE Plastic – color	0.14	Pound
Shrink Wrap	0.18	Pound
Aluminum Cans	0.77	Pound
Steel(“Tin”) Cans	134	Ton
Scrap Metal	130	Ton
Polyvinyl Chloride Plastic (PVC)	0.16	Pound
Polypropylene Plastic	0.21	Pound
Polystyrene Plastic	0.13	Pound
Polycarbonate Plastic	0.20	Pound
Mixed Unsortable Plastic Scrap	0.01	Pound
Mixed Shredded Tires	60.00	Ton
No.1 Shredded Tires	120.00	Ton
No.1 Tread Chips	160.00	Ton
No.1 Rubber Chips	280.00	Ton
Scrap Whole Computers	32.50	Ton
Scrap CPU Units	35.75	Ton
Scrap Drives	29.25	Ton
Scrap Keyboards	8.12	Ton
Scrap Printers	11.38	Ton
Scrap Scanners	9.75	Ton
Magnetic Tape Media Waste	40.00	Ton
Scrap Floppy Disks	40.00	Ton
CD/ DVD Scrap	60.00	Ton
Populated Circuit Boards	1,000.00	Ton
Circuit Boards (sheared flush)	800.00	Ton
Soldered Circuit Board Trimmings	900.00	Ton
High Grade Circuit Board Scrap	18,666.24	Ton
Mixed Scrap Glass	2.25	Ton
Scrap Incandescent Light Bulbs	25.50	Ton



The City of Keene maintains a Materials Recovery Facility(MRF) and brings in waste materials from surrounding towns so this concept has a model within the state. Another example of a regional program is the Chittenden County, Vermont, facility. It employs 40 people, has an operating budget of about \$6.3 million and serves 145,000 people in 18 towns and cities. In 2004, 45,000 tons of materials were recycled. The City of Manchester has contracted with a waste hauler and a broker to set up a dual stream MRF on city property. It will be interesting to report on the improvement of recycling rates for this city as the new MRF begins operation.

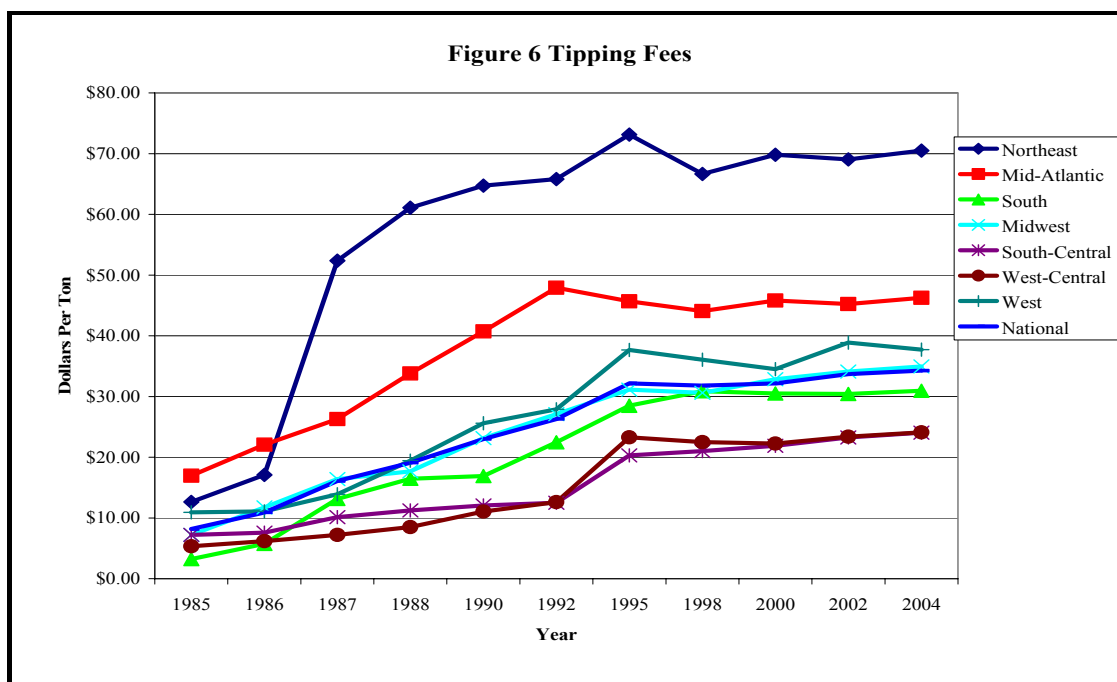
DES has provided technical assistance to the Sullivan County Commission which was tasked with determining the feasibility of establishing a MRF in the county. The data provided to the commission clearly showed that a MRF was feasible but would cost approximately \$6 million to develop. A pay-back within 5 years would be possible with aggressive recycling efforts by the member towns. Each of the counties could investigate the establishment of a regional MRF.

## 2. Costs of Disposal

This year the respondents to the Annual Facility Reports were asked to voluntarily provide information on the line item budget costs for solid waste operations and disposal for their facilities. Of 236 reporting entities, this data was obtained from 113 for a 48 percent return rate. These 113 facilities reported a total budget of \$43,429,300 in costs for the year 2005. This resulted in a cost per capita for these towns and cities of \$78.46. Using this number and multiplying by the estimated population of New Hampshire for 2005 results in a state-wide cost of approximately \$104 million. This should be viewed as a minimum level. In discussion with some towns, it was determined that facility operators are often paid out of the Highway Department budget, particularly when the solid waste facility is not a full time operation, and were therefore not counted. Further, utilities, fuel, maintenance, and other expenses are often not directly assigned to the solid waste facility. As the per capita generation rate increases along with external costs, this number can only be expected to go higher.

Commercial disposal tonnage is approximately the same as residential. This would place the commercial costs at about \$100 million. Add 170,000 tons of scrap steel at \$350 a ton and additional recycling business income of approximately \$40 million and a conservative estimate of the waste business in New Hampshire is about \$300 million.





Regions	State Postal Codes
Northeast:	CT, MA, ME, NH, NY, RI, VT
Mid-Atlantic:	DE, MD, NJ, PA, VA, WV
South:	AL, FL, GA, KY, MS, NC, SC, TN
Midwest:	IA, IL, IN, MI, MN, MO, OH, WI
South Central:	AR, AZ, LA, NM, OK, TX
West Central:	CO, KS, MT, ND, NE, SD, UT, WY
West:	AK, CA, HI, ID, NV, OR, WA

The above chart (Figure 6) presents the trend in national tipping fees<sup>8</sup>. The Northeast, in which New Hampshire is included, has the highest fees at more than twice the national average. The National Solid Waste Management Association report referenced below also presented information that the cost of incineration at \$61.64 per ton was about 80 percent higher than the national landfill average fee. This difference in rates has stayed stable since 1982 when the incinerator fee was \$12.91 per ton and the landfill fee was \$8.07 per ton. The consistent upward trend in tipping fees will be exacerbated as the cost of fuel increases. While there is now a substantial amount of solid waste exported to states and regions with excess capacity and low tipping fees, increasing transportation costs will rapidly make this less of an option. New Hampshire must continue to provide and develop in-state capacity or face even higher costs of disposal in the near future. The closest facility that can accept waste from New Hampshire long term is in Schuyler Falls, New York, across Lake Champlain from Burlington, Vermont and it is 250 miles away from Concord.

<sup>8</sup> Repa, Edward W., "National Solid Wastes Management Association 2005 Tip Fee Survey," March 2005.



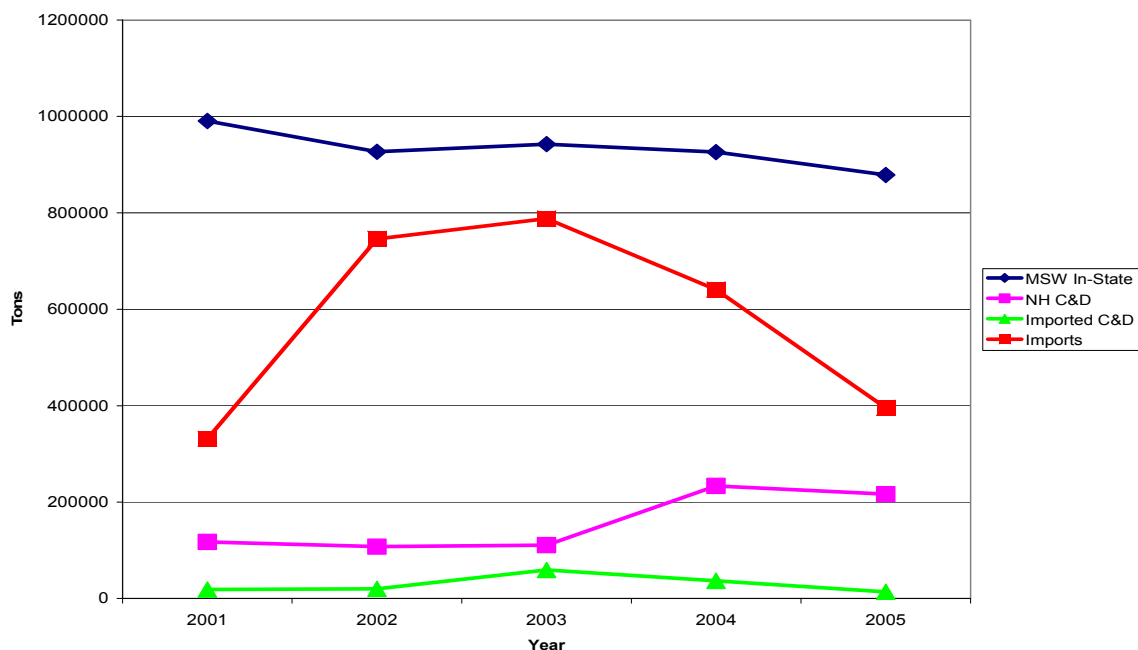
The solid waste industry is a major part of the economy. The USEPA estimates that the solid waste industry contributed over \$96 billion, 948,000 jobs, and just over one percent of U.S. GDP to the nation's economy. This included all direct, indirect and induced effects resulting from solid waste industry activities. For every dollar of revenues generated by the industry, a total of \$1.23 in additional revenues was generated in the economy through the multiplier effect. Similarly, for every job in the solid waste industry, the multiplier effect created an additional 1.58 jobs outside the industry. Waste Management, Inc. is the largest solid waste company in the world, ranking 170 in the US Fortune 500 and 344 in the world listing. Its 2005 profit was \$1.182 billion on revenues of \$13.074 billion. Casella, the state's second largest waste company, had income of \$11.1 million on revenues of \$525.9 million.

Overall, there is a trend in the industry to consolidate. Recently, Schnitzer Steel Industries of Portland, Oregon has purchased two New Hampshire companies, Advanced Recycling and New England Metals Recovery. With this purchase, there remains only one, small independent steel scrap company in New Hampshire. Schnitzer recycles 4.9 million tons per year of steel and uses this as feedstock for its steel mills.

### 3. Disposal Trends

Municipal Solid Waste disposed of in the state has remained fairly stable over the 5 year period presented in Figure 7 below. Imports, which primarily go into the Waste Management, Inc. landfill in Rochester, NH, vary widely year to year. Significantly, NH generated construction and demolition debris that is sent to the landfills is increasing while the imported tonnage of C&D remains at a low and constant level. All C&D was landfilled and none was incinerated. None of the incinerators in the state are permitted to burn C&D.

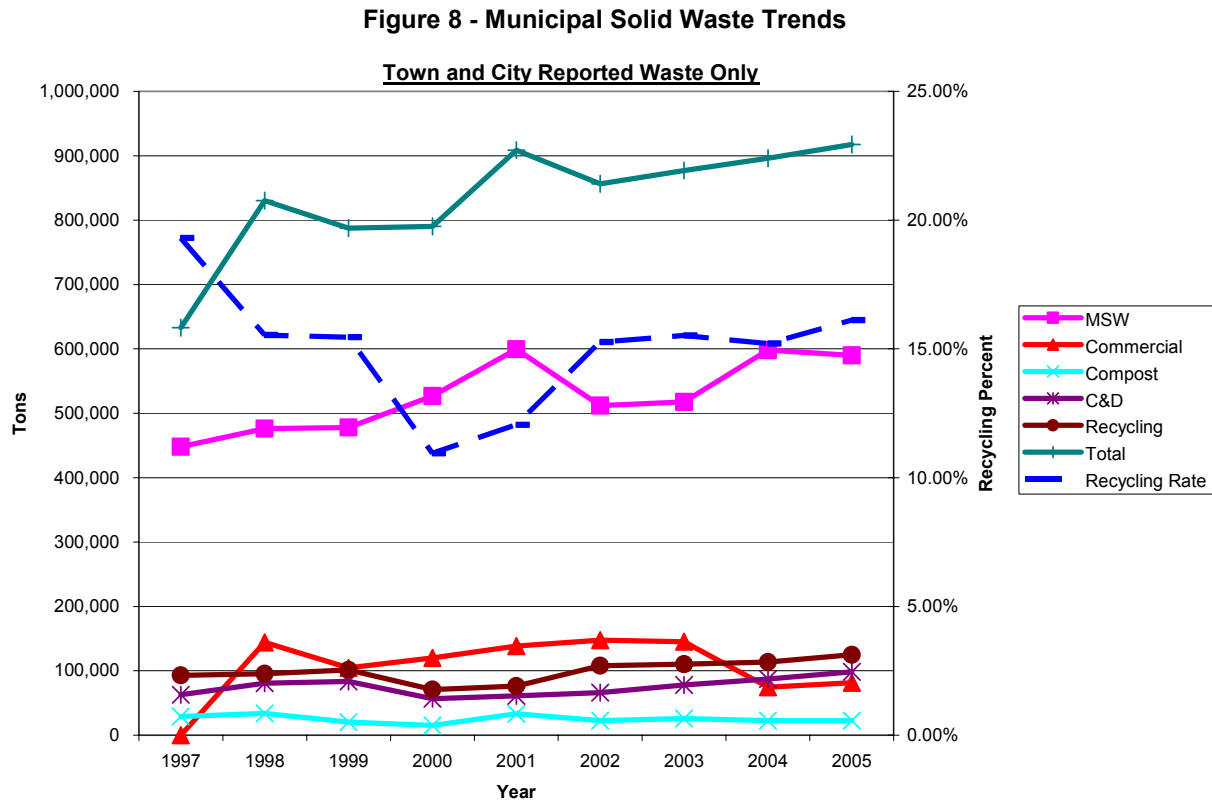
**Figure 7 - MSW and C&D - Instate and Imported**





#### 4. Municipal Trends

Figure 8 below presents data from the 2005 Annual facility Reports. This information is only representative of the municipal facilities. Significant in the chart is that the overall recycling rate is consistently below 20 percent for the municipalities. The amount of material reported has increased, essentially at slightly more than the growth rate in population.



Composting has remained flat. Only 84 of the 235 municipalities covered by the Annual Facility Reports indicate that they do any composting at all. The state does have a ban on the disposal of leaf and yard waste at landfills and incinerators. It may be assumed that in those municipalities that do not report composting, the majority of the material is either composted or burned at home.

#### E. Legislative Actions

##### 1. State Legislation

The 2005 Legislative session saw a number of solid waste bills, mostly concerning Construction and Demolition debris (C&D). Of the C&D bills, only the extension on the moratorium on burning of C&D was passed. Three other bills relative to solid waste or recycling were passed and are listed in Appendix 1.



## 2. Congressional Actions and Federal Court Rulings

### a. Congressional Actions

There were solid waste related bills introduced in the United States Congress (both House and Senate) in 2004 and 2005 focused on the issue of interstate transportation, bans on incineration of solid waste, electronics waste recycling and/or the ability of the States to limit excessive imports. In addition, there was at least one bill seeking to restrict importation of solid waste from foreign countries in response to disposal of Canadian solid waste in Michigan landfills. However, to date, none of the bills have been enacted into law. A summary of the bills can be found in Appendix I.

### b. Federal Court Rulings

Federal Rules for “Other” Solid Waste Incinerators - The Environmental Protection Agency (EPA) was bound by a consent decree to establish a new source performance standard (NSPS) (codified in 40 Code of Federal Regulations (CFR) Part 60 Subpart EEEE and FFFF) for existing “other” solid waste incinerators (OSWI). These new rules were issued December 16, 2005. The rules require the state to submit a State Plan implementing the emission guidelines within one year after promulgation of the guidelines. The State Plan must be at least as protective as the proposed federal rule and the facilities will have three years after the promulgation of the State rule to demonstrate compliance with the regulations. NHDES has drafted rules and is now in the rule making process and expects to have the rules in place by December 16, 2006.

Facilities affected by this proposed federal rule are incineration units burning municipal solid waste (MSW) with a capacity less than 35 tons per day, which includes the municipal incinerators operating in the towns of Candia, Bridgewater-Hebron, Litchfield, Ossipee and Wilton. EPA estimates the annual costs of installing and operating a wet scrubber (Maximum Achievable Control Technology required to comply with the proposed limits) to range from \$162,000 to \$253,000 per year for existing very small municipal waste incinerators. With the possible exception of Bridgewater-Hebron, without installing more pollution control equipment, none of the facilities noted above will be able to pass EPA’s proposed rules. As of the date of this report, Candia, Wilton and Litchfield have indicated that they will be shutting down their facilities and seeking other means of disposal. Bridgewater-Hebron’s initial stack testing indicated that they were not able to meet some of the emission criteria. They indicated that a second test would be performed now that the facility has been running for some time to see if they can meet the standards with existing equipment.

Overall, these small incinerators provide no more than 5,000 tons per year capacity which can readily be absorbed by the large landfill facilities or waste to energy incinerators.

## F. DES Solid Waste Programs

### 1. Toxics Reduction



a. Household Hazardous Waste (HHW)

Regulatory changes are being made that will streamline the HHW current rules. These changes will eliminate some requirements a collector of household hazardous waste must meet. The amended rules are being designed to encourage the collection, reuse, and recycling or proper disposal of HHW by municipalities, regional agencies and even private collectors.

New Hampshire households generate approximately 7,406,250<sup>9</sup> pounds of household hazardous waste. Household hazardous waste comprises less than 1% of NH's residential solid waste stream. Although this portion of the waste stream is small, it causes a large percentage of the pollution problems associated with landfills and incinerators. Many of the materials commonly used by homeowners would be classified as hazardous wastes if used in an industrial setting. For example, muriatic acid is commonly used in homes to clean tile grout and many drain-opening products contain concentrated sodium hydroxide. In the business sector, these are subject to New Hampshire's Hazardous Waste Rules and USEPA regulations.

In the past fifteen years, the DES Household Hazardous Waste Collection Program has provided over 525 grants totaling more than \$3.25 million for HHW collection projects. In 2005, there were 53 HHW events that collected approximately 430,000 pounds of homeowner-generated hazardous waste. DES grant funds provided more than \$125,000 in assistance to New Hampshire communities to offset costs associated with these collection events. DES has also supported the development of permanent HHW collection centers in Keene, Wolfeboro, Goffstown and Nashua.

b. Toxics in Packaging

In 1990, New Hampshire passed a toxics-in-packaging law to curb the amount of toxic metals entering the municipal solid waste stream, and ultimately, landfills and incinerators. The law prohibits manufacturers from intentionally introducing lead, mercury, cadmium, and hexavalent chromium in packaging and packaging components that are distributed in New Hampshire. Nineteen states have adopted the same model as New Hampshire and 9 of these states, New Hampshire included, work together to ensure consistent application of the law through the Toxics in Packaging Clearinghouse (TPCH). A recent project by the Clearinghouse has shown that a significant number of packages distributed or sold in the state are not in compliance with the law. The department and the TPCH are working together to educate industry and the member states may pursue enforcement under the state laws.

c. Used Oil Grant Program

Used Oil is a common groundwater and surface water contaminant. It takes only one pint of oil to produce a one-acre oil slick or one quart to contaminate 250,000 gallons of

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<sup>9</sup> Estimate based on State of New Hampshire population estimates and a four-city study called *The Garbage Project*, conducted by William Rathje at the University of Arizona in 1987



groundwater. Used oil is also a valuable commodity. The department provides grants to encourage recycling and proper management of “do-it-yourself” (DIY) used oil and filters. Since 1995, used oil grants totaling almost \$ 600,000 have benefited 177 towns, and the program has helped to collect over 1,000,000 gallons of DIY used oil. In calendar year 2005, awards were made to 21 entities and totaled \$44,569.61. Since some of the entities that received grants were Solid Waste Districts, a total of 31 towns benefited from the grants. Data from the Annual Facility Reports indicate that municipalities recycled at least 180,000 gallons of used oil in 2005.

#### d. Video Display Device Disposal Ban

Collectively known as Video Display Devices (VDD), items such as television tubes, computer monitors, liquid crystal displays and plasma display screens contain lead and possibly other toxic metals. Lead can be leached from VDDs under landfill conditions or can be made airborne if incinerated. New Hampshire has passed House Bill 1455 that places a ban on the disposal of VDDs in landfills and incinerators effective July 1, 2007. The DES Solid Waste Technical Assistance Section will be developing public service announcements and literature to inform residents of the state of the ban and recycling options. In addition, DES will be working with the electronics recyclers in the state on promoting events. A webpage will be placed on the DES website with resources for consumers.

New Hampshire has about 15 in-state electronics recyclers and there are several national recyclers that will take care of small items such as batteries and cell phones. Several computer manufacturers have developed take-back programs for their product. Dell will recycle computers for free, which includes pick-up at the residence. Hewlett-Packard has put a return system in place and is working with the State of Maine on its new electronics recycling program. Apple Computer is starting a nationwide take-back program. There are also a number of charitable organizations that will accept useable, recent models of computers for redistribution.

Electronic equipment recycling has a negative return on investment. While many parts of the equipment do have value, the cost of deconstruction is greater than the recovered value. Computer hard drives, chip sets, plastics and steel are reusable, but other components have a cost of disposal. There is only one glass smelter in the US that is capable of refining leaded glass from the display terminals and almost all of the new display tubes are manufactured in Asia. Therefore, end of life electronic equipment will continue to require some form of fee to make recycling profitable. At present, the average fee is \$0.15 per pound. Data from California and Maine, states that have imposed a disposal fee, has shown that increases in the amount of material available for recycling has resulted in economies of scale and a reduction in the cost for disposal.

## 2. Source Reduction, Reuse, Recycling, and Composting Assistance

The Solid Waste Technical Assistance Section within the Waste Management Division works with communities, organizations, and businesses to encourage source reduction, reuse, recycling and composting, all of which divert solid waste from disposal in landfills and



incinerators. Specifically, programs provide information, technical assistance and planning support to communities, solid waste districts and businesses, and work with other state agencies and outside organizations to further common waste diversion goals.

### 3. Product Stewardship

Product stewardship means that manufacturers accept responsibility for the end-of-life problems associated with their products. The National Electronic Product Stewardship Initiative (NEPSI) was abandoned and the Northeast Recycling Council (NERC) is cooperating with the Council of State Government Eastern Regional Conference (CSG/ERC) to develop model legislation for use by the northeast states. New York State has introduced legislation based on this model. While New Hampshire has banned the disposal of VDDs, the legislation enabling the ban also required DES to participate in the regional activities and to make a report to the legislature this fall. In August 2006, New Hampshire joined with eight other member states of NERC to voice support for the CSG/NERC model legislation. Based on the experiences of other states, it may be possible to reconsider legislation establishing an Advance Recycling Fee, collected from either the manufacturers or from the consumer at the point of sale to assist in the disposal of electronics.

### 4. Capacity Planning

In addition to the efforts to divert wastes from disposal methods, the Solid Waste Technical Assistance Section collects the data from the annual facility reports, and uses that data to report on the status of solid waste management and to project future capacity needs. This process involves analysis of current generation, diversion and disposal activities in order to determine future solid waste disposal needs for the state. The department has completed an in-depth analysis of solid waste capacity in New Hampshire for the next twenty years. The analysis is also used to project waste generation and growth. These analyses are kept current based on data collected in the annual facility reports. A full discussion of capacity is provided earlier in this report.

### 5. Permitting

DES's permitting process ensures that facilities are sited, designed and built with emphasis on protecting public health and the environment. Toxics reduction and contaminant control are central to permitting requirements, which include setbacks to wetlands and water bodies, and design features such as leachate collection systems that protect groundwater. Air quality is protected by requiring the control of gaseous emissions for large sources of methane and toxics generated from some landfills. Because it is a proactive process, permitting avoids problems using such tools as operation plans to ensure that waste is managed in an environmentally sound manner and that permit storage limitations are not exceeded. Closure plans ensure that, after its useful lifetime, the site will be maintained in a manner that continues to protect the public health and the environment. The department processed 36 permit applications in 2005.



## 6. Financial Assurance

Solid waste facilities are required to provide and maintain financial assurance for closure and post-closure costs to protect the State's interest and to ensure that adequate funds are available when needed. The objective of financial assurance is to assure that the State does not have to expend resources for closure and/or post-closure. Municipalities can use a local government financial test to verify their ability to close and maintain their facilities. As of June 2005, \$87,947,647 of municipal and private funds have been dedicated for closure and post closure costs for 98 facilities.

## 7. Compliance

### a. Solid Waste Operator Certification

As required by RSA 149-M:6, XIII, the Waste Management Division administers the Solid Waste Operator Training and Certification Program to provide education and training on waste management technology and practices. Through this program, operators are better prepared to keep landfills, incinerators and transfer stations in compliance with applicable laws and administrative rules. Over 2,000 operators have successfully completed the program and the total number of operators with current certification is 1,069. Four basic operator training sessions were given in 2005. Further, 15 workshops on various topics, such as used oil handling and storage, compost, construction and demolition, transfer station design, recycling and disposal options for unique items, household hazardous waste, and electrical safety, were offered at several locations across the state to provide continuing education for operators.

### b. Inspections

The Solid Waste Compliance Section oversees adherence to permits and closure plans through inspections of solid waste facilities. The Section performed 97 inspections in 2005 and issued one Letter of Deficiency.

## 8. Remediation

### a. Unlined Landfill Closure

Because unlined landfills can negatively impact groundwater quality, over 90 of the 155 municipally-owned solid waste landfills in New Hampshire have been closed or are in the process of closing. Through an aggressive program funded by a combination of 20 percent state grants to the communities and low interest loans from the State Revolving Loan Fund (see Section 9, below), an additional 65 active and inactive unlined landfills are scheduled for closure by 2011.

### b. Inactive Asbestos Disposal Site Program

For over 70 years, asbestos-containing building materials were manufactured in Nashua by a company that regularly delivered its asbestos waste, free of charge, to area property



owners for use in filling low lying areas. As a result, hundreds of residential, commercial, industrial and public properties in Nashua and Hudson are now filled with tons of asbestos waste. Because the inhalation of asbestos fibers causes serious illness in humans, the DES implements a program to control the sites and assure that asbestos is not released to the environment. The program includes public education, site monitoring and remediation, and technical assistance to ensure land development projects are protective of human health and the environment.

#### 9. Unlined Landfill and Incinerator Closure Grant Program

The Unlined Municipal Landfill Closure Grant Program became effective on July 1, 1995 and was expanded on January 21, 2000 to include 18 municipal incinerators constructed prior to July 1, 1998. The purpose of the program is to reimburse municipalities 20 percent of the eligible capital costs associated with unlined landfill/incinerator closures. These costs include hydrogeological investigation, engineering design, and construction of closure elements.

The department has awarded 131 grants totaling \$33.8 million, with over \$22.1 million in reimbursements paid as of June 30, 2006. To date, of the 131 grants awarded, DES has awarded two incinerator grants totaling \$116,069 and anticipates spending an additional \$1 million more for incinerator closures. The remaining 129 grants are for landfill closure. Grant money awarded was much greater in the first few years of the program due to already completed closures eligible to apply for lump sum reimbursement. Over the last two years, the rate of amortized grant money awarded has been more consistent with the current rate of landfill and incinerator closures

#### 10. New Hampshire Green Yards Initiative

The motor vehicle salvage business is one of the best examples of recycle/reuse in the country. The dismantling of vehicles for used parts and fluids and the sale of remaining materials as scrap have gone a long way toward conserving natural resources and reducing the burden on our landfills. It is estimated that 95 percent of end-of-life automobiles are sent to recycling facilities and that approximately 85 percent by weight of the material in the vehicle is recycled or reused. Unfortunately, some methods used to dismantle and store salvaged vehicles can result in serious negative impact on the environment. The money and time spent cleaning up the problems after they occur is better spent implementing good environmental business practices that prevent pollution of our air, water, and soils.

Recognizing this, in 2003 DES initiated the N.H. Green Yards Program to improve environmental management practices at nearly 200 motor vehicle salvage yards handling over 50,000 vehicles annually in New Hampshire. Working in partnership with the N.H. Auto and Truck Recyclers Association, DES is implementing the program in two phases. In Phase I, which is nearing completion, DES is educating salvage yard operators, municipal officials, and other stakeholders about environmentally responsible business practices at auto salvage yards. Also, DES is inspecting all facilities and issuing an “on-the-spot” Best Management Practices (BMP) Evaluation Report identifying deficiencies and needed



corrective actions, if any. This is intended to help the facility owners prepare for Phase II commencing in 2007. In Phase II, all motor vehicle recyclers will be expected to regularly audit their facilities for compliance and, annually, submit a written compliance statement to DES and local licensing officials. The inspection data show that many Motor Vehicle Recovery Yards (MVRY) have made substantial improvements since the program began in 2003. For example, since the program began, about 30 percent more yards now handle fluids over an impervious spill control surface rather than bare ground and roughly 60 percent more yards store their fluids inside secondary containment under a roof, as required by state rules. However, the BMP evaluation reports also indicate there is still room for substantial improvement. Few MVRYs are fully implementing all of the BMPs.

Fluid management issues remain a primary concern. Despite the improvements noted above, about 30 percent of the inspected yards still do not remove fluids before storing end-of-life vehicles, 21 percent still drain vehicles over bare ground, and 37 percent do not properly label their fluid containers. In light of this data, DES will concentrate the remaining Phase I educational efforts on proper fluid management.

Lastly, DES is also “test driving” a process that gives special recognition to auto recycling yards that operate in a manner that is above and beyond compliance. Yards that show exemplary environmental work practices and meet certain other criteria will earn the designation “Certified N.H. Green Yard.” The process for becoming a “Certified N.H. Green Yard” is currently being implemented by DES as a pilot program with the help of 28 auto recycling facilities that volunteered to take part in the program. So far, 14 of the 28 have achieved the certification.



## **Appendix I: Legislative Actions**

### **Federal Bills**

A number of federal bills were introduced during the 109<sup>th</sup> congress. None of these have been enacted or been reported out of committee. There is pending federal legislation on interstate transportation of solid waste, HB 274 that would allow local jurisdictions to prevent importation of waste from another state. SB-510 is a bill to encourage recycling of electronics waste.

### **NH Legislation**

HB 1429	Chapt. 282
Relative to municipal exemptions for hazardous waste cleanup liability and preventing the exemption of privately-owned landfills and ancillary facilities from property taxes.	I Sec 1,2 Eff. 9/13/06 II Rem Eff. 6/15/06
HB 1307	Chapt. 100
Relative to application requirements for motor vehicle recycling yard licenses.	Eff. 1/1/07
HB 1455-FN	Chapt. 171
Relative to the disposal of video display devices.	Eff. 7/1/06



## **Appendix II: Other Organizations Involved in Solid Waste Issues**

### **STATE/LOCAL ORGANIZATIONS**

#### **UNH Cooperative Extension**

Address: Grafton County UNH Cooperative Extension, RR 1 Box 65 F  
North Haverhill, NH 03774-9708  
Telephone: 603-787-6944  
Contact: Thomas E. Buob, Ext. Educator  
E-mail: [tom.buob@unh.edu](mailto:tom.buob@unh.edu)

Typically, the Cooperative Extension has identified and initiated projects in specific areas, rather than committing dedicated staff to an ongoing program in recycling. For example, the Cooperative Extension developed a kindergarten through twelfth grade educational curriculum on source reduction and recycling for statewide distribution, and took a leadership role promoting municipal leaf and yard waste composting and source separated food waste composting in New Hampshire. Additionally, the Cooperative Extension has worked with DES and New Hampshire industry in the Wood Ash Program. Recently, the DES, the Cooperative Extension, and the Department of Agriculture offered joint programs on composting and small farm manure disposal options.

#### **Wastecap Resource Conservation Program, NH Business And Industry Association**

Address: 122 North Main Street, Concord, NH 03301  
Telephone: (603) 224-1517  
Web Site: [www.wastecapnh.org](http://www.wastecapnh.org)  
Contact: Mark Toussaint, Executive Director

For 15 years, WasteCap Resource Conservation Network (WasteCap ReCoN) has provided a business-to-business approach for companies to recognize and act upon opportunities for resource conservation, including waste reduction, energy efficiency, water conservation, and pollution prevention. The program's website provided technical assistance leads, the New Hampshire Materials Exchange (also available in the program's newsletter), information on water conservation and links to many other sites for assistance. WasteCap offered a range of educational opportunities for the business community, including conferences, workshops, and an environmental management system collaborative. The program also offered site visits and recognition to businesses through its Waste(NOT!) Challenge environmental management criteria. The program will be closed on November 1, 2006 due to lack of funding.

#### **New Hampshire the Beautiful**

Address: 2101 Dover Road, Epsom, NH 03234  
Telephone: 1-888-784-4442 Toll-Free in NH, (603) 444-9812  
E-mail: [nhtb@ncia.net](mailto:nhtb@ncia.net)

New Hampshire the Beautiful, Inc. (NHtB) is a private, non-profit Charitable Trust established in 1983 and voluntarily funded by the soft drink distributors and bottlers, retail grocers, and the malt beverage industry. The Board of Directors of NHtB has awarded the Northeast Resource Recovery Association (NRRRA) a contract to administer the grants and signs programs in addition



to overseeing the distribution of the roadside litter bags. NRRA will not perform the lobbying efforts of NHtB and the Board of Directors of NHtB will maintain the anti-bottle bill lobbying efforts through the Board.

## **REGIONAL and NATIONAL ORGANIZATIONS**

### **Northeast Resource Recovery Association**

Address: PO Box 721, Concord, NH 03302-0721  
Telephone: (603) 798-5777  
Web Site: [www.recyclewithus.org](http://www.recyclewithus.org)  
E-mail: [nrra@tds.net](mailto:nrra@tds.net)  
Contact: Elizabeth Bedard, Executive Director

Founded in 1981 as a private, non-profit organization, the Northeast Resource Recovery Association (NRRA) provides technical, educational, and marketing support to New Hampshire municipal recycling programs. NRRA provides marketing and brokerage services for municipalities in New Hampshire, Massachusetts, Maine and Vermont. This cooperative approach combines materials from many communities to gain economies of scale in transportation, and offering access to markets which would typically be denied to individual small communities. NRRA also provides extensive outreach and technical assistance to its member communities designed to strengthen and expand municipal recycling activities. NHDES is a Trustee and Donald E. Maurer, SWTAS, is ex-officio member of the Board of Directors.

### **Northeast Waste Management Officials' Association (NEWMOA)**

Address: 129 Portland Street, 6<sup>th</sup> Floor, Boston, MA 02114  
Telephone: (617) 367-8558  
Website: [www.newmoa.org](http://www.newmoa.org)  
Contact: William Cass, Executive Director, ext. 301 or [wcass@newmoa.org](mailto:wcass@newmoa.org)

NEWMOA is a nonprofit, nonpartisan, interstate association established in 1986 by the governors of the New England states as an official interstate regional organization. The membership is composed of state environmental agency directors of the hazardous waste, solid waste, waste site cleanup, pollution prevention and underground storage tank programs in Connecticut, Maine, Massachusetts, New Hampshire, New York, New Jersey, Rhode Island, and Vermont. NEWMOA's mission is to help states articulate, promote, and implement economically sound regional programs for the enhancement of environmental protection. The group fulfills this mission by providing a variety of support services that facilitate communication and cooperation among member states and between the states and EPA, and promote the efficient sharing of state and federal program resources.

### **Northeast Recycling Council (NERC)**

Address: 139 Main Street, Suite 401, Brattleboro, VT 05301  
Telephone: (802) 254-3636  
Web Site: [www.nerc.org](http://www.nerc.org)  
Contact: Lynn Rubinstein, Executive Director, [lynn@nerc.org](mailto:lynn@nerc.org)

The Northeast Recycling Council provides technical assistance, information access, research, and networking opportunities on recycling market development for state and regional programs



in the six New England states as well as New York, New Jersey, Pennsylvania, and Delaware. In addition to providing a forum for the exchange of information between states and state agencies, NERC undertakes research and education projects that address regional recycling, market development and waste management issues. DES is a member of NERC and Donald E. Maurer, SWTAS, serves as Treasurer.

**Association of State and Territorial Solid Waste Management Officials (ASTSWMO)**

Address: 444 North Capitol Street, NW, Suite 305, Washington, DC 20001  
Telephone: (202) 624-5828, Fax (202) 624-7875  
Website: [www.astswmo.org](http://www.astswmo.org)  
Contact: Thomas Kennedy, Executive Director

The Association of State and Territorial Solid Waste Management Officials (ASTSWMO) supports the environmental agencies of the States and trust territories. ASTSWMO focuses on the needs of State hazardous waste programs; non-hazardous municipal solid waste and industrial waste programs; recycling, waste minimization, and reduction programs; Superfund and State cleanup programs; waste management and cleanup activities at federal facilities, and underground storage tank and leaking underground storage tank programs. The Association's mission is: "To Enhance and Promote Effective State and Territorial Waste Management Programs, and Affect National Waste Management Policies." The organization is structured to accomplish this two-part mission through both member committees and Association staff efforts.

**Toxics In Packaging Clearinghouse (TPCH)**

Address: Toxics in Packaging Clearinghouse c/o NERC  
139 Main Street, Suite 401, Brattleboro, VT 05301  
Telephone: (802) 254-3636  
Website: [www.toxicsinpackaging.org](http://www.toxicsinpackaging.org)  
Contact: Patty Dillon, TPCH Program Manager ([info@toxicsinpackaging.org](mailto:info@toxicsinpackaging.org))

In 1990, New Hampshire was the second state in the nation to adopt the Toxics in Packaging model legislation developed by the Coalition of Northeastern Governors (CONEG). Nineteen states have adopted a toxics in packaging law based on the CONEG model and the model has been used internationally. To ensure consistent and effective implementation of the laws, the Toxics in Packaging Clearinghouse (TPCH) was created in 1992 to: simplify the law's administrative procedures; promote cooperation and information sharing between participating states; minimize procedural burdens on affected industries; and promote understanding and greater awareness of the law's objectives. The TPCH is assisted in its mission by technical advisers from representatives of industry and public interest organizations. The nine member states are New Hampshire, Maine, Rhode Island, Connecticut, New York, New Jersey, Minnesota, California, and Iowa.



### **Appendix III: Status of the Recycling Market Development Steering Committee**

The Recycling Market Development Steering Committee was established by Chapter 151, Laws of 1995, to “promote the establishment and expansion of recycling related industries and companies in New Hampshire.” Its duties, as specified in the legislation, include:

1. Advocating and securing funding for recycling market development.
2. Facilitating close communication and interaction between the state’s recycling and economic development agencies and other involved organizations.
3. Providing continuity to the State’s recycling market development efforts by reviewing and revising market development priorities, evaluating the impact of market development initiatives, and recommending new directions for market development efforts.

The Steering Committee was formed as a direct result of work completed between 1993 and 1995 by a task force established by the legislature on recycling market development. This task force made four primary recommendations to the Governor and Legislature in its final report (January 1995):

1. Establish a full-time, permanent professional position for a recycling market development specialist;
2. Establish a permanent recycling market development steering committee;
3. Take immediate steps to more aggressively support and promote existing recycling-related businesses in New Hampshire; and
4. Maintain and expand the state’s commitment to purchasing products with recycled content.

The legislation establishing the Steering Committee fulfilled Recommendation No. 2 of the task force. A position was established at the Department of Resources and Economic Development (DRED) in 1996 to fulfill Recommendation No. 1. In 1996 and 1997, the position was funded through a federal grant, Jobs Through Recycling, but in 1998, the position became funded by general funds. The position was discontinued in October 2003 due to budget cuts and has not been budgeted since.

The State of North Carolina operates the Recycling Business Assistance Center (RBAC). Recycling provides more than 14,000 jobs to North Carolina citizens. RBAC’s mission is to support and grow the state’s recycling industry through technical assistance and partnerships. RBAC is a partnership of the N.C. Department of Environment and Natural Resources’ Division of Pollution Prevention and Environmental Assistance, and the Department of Commerce. A study of the impact of recycling on North Carolina’s economy can be found at <http://www.p2pays.org/ref/34/33912.pdf>.

RSA 149-O:5 imposes an annual reporting requirement on the Recycling Market Development Steering Committee.



### Appendix IV: Municipality Data

Town	2005 NH Population (NH OEP)	2005 Residential MSW Tons/Year	2005 Commercial and Industrial Tons/Year	2005 Const & Demo tons/yr	2005 Composting tons/yr	2005 Recycling tons/yr	2005 Recycling Rate
Acworth	880	280	0	106	0	128	31.41%
Albany-R	700	Not Available	0	0	0	0	Not Available
Alexandria	1,460	669	0	268	0	90	11.85%
Allenstown	5,150	3,472	0	0	50	105	4.27%
Alstead	2,040	1,390	0	4,703	0	0	0.00%
Alton	5,310	1,752	0	1,033	34	59	5.02%
Amherst	11,610	3,780	0	507	18	1,007	21.33%
Andover	2,240	1,393	0	136	10	320	19.15%
Antrim	2,580	240	0	0	0	220	47.83%
Ashland	2,000	807	0	324	23	224	23.38%
Atkinson	6,690	3,135	0	106	0	970	23.63%
Auburn	5,070	6,667	0	0	0	43	0.64%
Barnstead - R	4,760	Not Available	0	0	0	0	Not Available
Barrington	8,210	738	0	249	0	283	27.72%
Bartlett-R	2,980	2,004	0	387	0	0	0.00%
Bath-NF	930	Not Available	0	0	0	0	Not Available
Bedford	20,760	10,730	0	0	56	1,310	11.30%
Belmont-NF	7,650	6,883	222	388	0	0	0.00%
Bennington	1,480	400	0	520	11	175	31.77%
Benton-NF	320	Not Available	0	0	0	0	Not Available
Berlin-RH	10,270	7,813	0	604	0	915	10.48%
Bethlehem	2,350	502	0	0	0	244	32.72%
Boscawen	3,990	2,461	945	0	0	265	7.22%
Bow	8,010	6,161	0	0	0	815	11.68%
Bradford	1,640	888	0	2	0	262	22.79%
Brentwood	4,000	Not Available	0	0	0	0	Not Available
Bridgewater-RH	1,030	222	0	30	7	350	61.69%



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Bristol	3,170	2,893	1,599	358	0	372	7.65%
Brookfield-R	680	Not Available	0	0	0	0	Not Available
Brookline	4,670	Not Available	0	224	50	125	Not Available
Campton-R	2,880	1,207	0	264	0	0	0.00%
Canaan	3,490	1,859	0	199	5	315	14.69%
Candia	4,180	906	0	0	20	453	34.30%
Canterbury	2,180	889	0	0	23	429	33.70%
Carroll	690	258	0	85	0	99	27.68%
Center Harbor-R	1,120	Not Available	0	0	0	0	Not Available
Charlestown	5,010	2,528	0	282	68	469	17.49%
Chatham-R	280	175	0	0	0	0	0.00%
Chester	4,570	659	0	0	5	388	37.33%
Chesterfield	3,770	690	0	277	0	404	36.97%
Chichester-R	2,500	Not Available	0	0	0	0	Not Available
Claremont	13,290	13,445	0	3,836	23	222	1.78%
Clarksville-R	300	Not Available	0	0	0	0	Not Available
Colebrook	2,300	918	0	342	7	476	34.45%
Columbia-R	760	143	0	30	0	0	0.00%
Concord	42,970	48,571	0	4,948	1,400	746	4.23%
Conway-RH	9,110	4,110	671	1,445	371	2,158	34.60%
Cornish	1,750	540	0	186	0	116	17.64%
Croydon	760	268	0	166	0	0	0.00%
Dalton	950	142	0	35	0	131	48.10%
Danbury	1,150	705	0	0	0	125	15.06%
Danville-NF	4,410	2,596	0	0	0	152	5.53%
Deerfield	4,220	1,562	0	62	23	478	24.26%
Deering -R	2,030	524	0	0	0	0	0.00%
Derry	35,570	4,799	5,133	1,184	1,027	3,781	32.62%



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Dorchester-R	380	Not Available	0	22	0	0	Not Available
Dover	28,750	4,900	0	352	963	3,982	50.23%
Dublin	1,550	276	0	69	2	260	48.72%
Dummer-R	310	211	0	0	0	0	0.00%
Dunbarton	2,490	1,061	0	152	16	440	30.03%
Durham	13,330	1,581	0	453	0	1,368	46.39%
E. Kingston	1,960	982	0	0	0	108	9.94%
Easton-R	280	Not Available	0	0	0	0	Not Available
Eaton-R	420	Not Available	0	0	0	0	Not Available
Effingham	1,410	485	0	150	2	223	31.64%
Ellsworth-R	90	36	0	8	0	0	0.00%
Enfield	4,860	2,777	0	357	0	319	10.31%
Epping	5,960	Not Available	0	0	0	0	Not Available
Epsom - R	4,490	Not Available	0	0	0	0	Not Available
Errol-R	330	138	0	0	0	47	25.46%
Exeter	14,740	3,188	0	0	0	3,762	54.13%
Farmington	6,430	3,000	15	840	0	321	9.63%
Fitzwilliam	2,290	281	0	213	9	240	46.97%
Fracestown	1,600	752	0	0	0	0	0.00%
Franconia-RH	980	539	0	332	40	414	45.70%
Franklin	8,620	6,478	480	646	0	391	5.32%
Freedom-NF	1,440	559	0	322	51	110	22.33%
Fremont	3,900	1,761	0	0	0	264	13.03%
Gilford-R	7,770	7,559	7,635	514	0	154	1.01%
Gilmanton	3,560	1,513	0	0	0	214	12.37%
Gilsum	830	206	0	74	0	65	23.98%
Goffstown	17,910	5,884	0	778	70	4,264	42.42%
Gorham-R	2,840	1,929	1,047	100	375	492	22.56%



<b>Town</b>	<b>2005 NH Population (NH OEP)</b>	<b>2005 Residential MSW Tons/Year</b>	<b>2005 Commercial and Industrial Tons/Year</b>	<b>2005 Const &amp; Demo tons/yr</b>	<b>2005 Composting tons/yr</b>	<b>2005 Recycling tons/yr</b>	<b>2005 Recycling Rate</b>
Goshen	810	334	0	251	5	86	21.34%
Grafton	1,190	557	0	241	0	146	20.79%
Grantham	2,410	1,282	260	584	0	190	10.94%
Greenfield-R	1,790	210	0	110	0	132	38.51%
Greenland	3,460	1,145	0	0	0	290	20.23%
Greenville - R	2,300	Not Available	0	0	0	0	Not Available
Groton	480	197	0	6	0	47	19.27%
Hampstead	8,690	3,487	0	640	0	69	1.93%
Hampton	15,530	8,657	0	1,307	163	3,127	27.54%
Hampton Falls NF	2,040	830	0	0	0	456	35.46%
Hancock	1,830	373	0	0	8	267	42.44%
Hanover	11,200	6,555	0	3,767	0	869	11.71%
Harrisville	1,120	170	0	47	1	59	25.86%
Harts Location -NF	30	Not Available	0	0	0	0	Not Available
Haverhill-NF	4,590	Not Available	0	0	0	0	Not Available
Hebron-R	530	Not Available	0	0	0	0	Not Available
Henniker	4,880	2,943	0	0	2,923	468	53.54%
Hill	1,080	488	0	90	0	113	18.76%
Hillsborough	5,450	4,132	3,017	785	0	546	7.09%
Hinsdale	4,310	365	19	181	7	47	12.22%
Holderness	2,030	913	0	480	0	375	29.13%
Hollis	7,660	2,830	0	0	0	1,098	27.95%
Hooksett	13,270	4,994	48	599	40	545	10.41%
Hopkinton	5,730	4,484	0	1,029	300	893	21.01%
Hudson	24,610	10,837	0	0	149	1,325	11.97%
Jackson -RH	890	539	0	160	0	426	44.18%
Jaffrey	5,780	1,015	0	1,225	0	416	29.08%
Jefferson-R	1,000	304	0	113	0	0	0.00%



Town	2005 NH Population (NH OEP)	2005 Residential MSW Tons/Year	2005 Commercial and Industrial Tons/Year	2005 Const & Demo tons/yr	2005 Composting tons/yr	2005 Recycling tons/yr	2005 Recycling Rate
Keene - RH1	23,020	39,263	0	7,269	0	6,075	13.40%
Kensington	2,070	665	0	0	0	179	21.18%
Kingston	6,230	Not Available	0	0	0	492	Not Available
Laconia-RH	16,880	17,750	10,509	1,076	185	564	2.58%
Lancaster	3,260	537	0	480	70	800	61.83%
Landaff-R	380	Not Available	0	0	0	0	Not Available
Langdon	630	349	0	11	0	0	0.00%
Lebanon	13,150	19,618	0	2,893	56	956	4.91%
Lee	4,420	1,166	0	379	11	595	34.20%
Lempster	1,060	590	0	544	0	139	19.10%
Lincoln-RH	1,310	1,052	0	468	180	642	43.86%
Lisbon-RH	1,660	512	0	297	0	319	38.35%
Litchfield	8,220	1,092	0	500	0	872	44.40%
Littleton	6,150	652	0	312	70	1,572	71.58%
Londonderry	24,880	13,173	0	197	1	1,875	12.46%
Loudon	5,000	3,920	192	255	65	549	12.99%
Lyman-R	530	Not Available	0	0	0	0	Not Available
Lyme	1,730	574	0	561	0	89	13.43%
Lyndeborough - NF	1,770	Not Available	0	0	0	0	Not Available
Madbury	1,740	Not Available	0	19	0	6	Not Available
Madison	2,210	923	0	486	0	226	19.71%
Manchester	110,550	46,650	0	3,027	0	4,880	9.47%
Marlborough	2,090	486	0	171	5	120	20.51%
Marlow	790	227	0	9	0	137	37.67%
Mason -R	1,260	Not Available	0	0	0	0	Not Available
Meredith-RH	6,720	2,568	0	1,208	0	695	21.29%
Merrimack	27,080	8,868	1,143	643	1,500	1,874	25.21%
Middleton	1,650	Not Available	0	0	0	45	Not Available



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Milan-R	1,310	587	0	0	0	0	0.00%
Milford	14,760	3,275	0	1,341	0	1,172	26.35%
Milton	4,360	664	0	327	0	206	23.69%
Monroe-NF	820	Not Available	0	0	0	0	Not Available
Mont Vernon	2,320	Not Available	0	0	11	209	Not Available
Moultonborough	4,960	863	0	648	135	546	44.12%
Nashua	88,740	41,074	26,697	9,382	6,955	6,343	16.40%
Nelson - NF	660	Not Available	0	0	0	0	Not Available
New Boston	4,840	1,423	0	236	8	749	34.75%
New Castle -NF	1,040	454	0	0	0	396	46.62%
New Durham	2,500	1,106	0	539	2	196	15.16%
New Hampton	2,220	1,328	0	0	0	0	0.00%
New Ipswich	4,950	427	0	0	23	172	31.29%
New London	4,490	3,181	3,049	1,038	0	788	11.22%
Newbury	1,990	905	0	754	8	224	20.37%
Newfields-NF	1,650	610	0	0	0	157	20.43%
Newington	810	Not Available	0	177	0	99	Not Available
Newmarket	8,930	921	0	320	12	1,074	54.12%
Newport	6,440	4,215	0	2,551	0	0	0.00%
Newton	4,570	1,785	0	0	0	345	16.21%
North Hampton	4,570	Not Available	0	0	7	562	Not Available
Northfield	4,910	3,206	1,227	156	6	202	4.47%
Northumberland-R	2,400	834	0	524	13	410	33.62%
Northwood	3,850	Not Available	0	0	0	0	Not Available
Nottingham	4,100	598	0	280	0	319	34.80%
Orange	300	106	0	7	0	0	0.00%
Orford	1,160	538	0	74	2	0	0.42%
Ossipee	4,600	1,293	0	785	60	510	30.61%



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Pelham	12,860	3,200	0	0	0	712	18.21%
Pembroke	7,420	4,888	1,633	692	135	173	4.50%
Peterborough-R	6,230	595	0	315	1,375	802	78.53%
Piermont	720	117	0	0	2	109	48.56%
Pittsburg-RH	880	432	0	250	0	302	41.21%
Pittsfield	4,340	2,454	0	1,149	0	1,227	33.33%
Plainfield	2,440	920	0	137	0	108	10.51%
Plaistow	8,040	3,900	0	0	500	568	21.50%
Plymouth	6,370	1,059	160	125	35	1,975	62.23%
Portsmouth	21,200	5,540	0	910	2,550	2,841	49.32%
Randolph-R	410	99	0	27	0	0	0.00%
Raymond	10,410	Not Available	0	0	0	492	Not Available
Richmond - NF	1,150	Not Available	0	0	0	0	Not Available
Rindge	6,060	900	0	237	0	300	25.00%
Rochester	30,270	11,254	13,000	0	0	2,872	10.59%
Rollinsford	2,740	686	0	235	11	304	31.50%
Roxbury -NF	240	Not Available	0	0	0	0	Not Available
Rumney-RH	1,560	500	0	126	1	333	40.03%
Rye	5,370	Not Available	0	0	68	1,183	Not Available
Salem	29,500	11,786	0	1,535	0	2,342	16.58%
Salisbury	1,300	587	0	43	0	123	17.36%
Sanbornton	2,980	555	0	373	3	305	35.72%
Sandown	5,660	2,200	0	300	100	603	24.22%
Sandwich	1,380	312	0	138	0	94	23.15%
Seabrook	8,530	4,373	0	581	17	664	13.47%
Sharon - NF	380	Not Available	0	0	0	0	Not Available
Shelburne	370	82	0	0	2	76	48.74%
Somersworth	11,900	2,039	0	0	0	1,494	42.29%



<b>Town</b>	<b>2005 NH Population (NH OEP)</b>	<b>2005 Residential MSW Tons/Year</b>	<b>2005 Commercial and Industrial Tons/Year</b>	<b>2005 Const &amp; Demo tons/yr</b>	<b>2005 Composting tons/yr</b>	<b>2005 Recycling tons/yr</b>	<b>2005 Recycling Rate</b>
South Hampton	900	260	0	0	0	100	27.78%
Springfield - NF	1,030	Not Available	0	116	0	0	Not Available
Stark-R	510	105	0	47	0	62	37.08%
Stewartstown-RH	990	673	0	119	0	926	57.90%
Stoddard	970	434	0	250	0	117	21.28%
Strafford	4,030	1,120	0	525	0	407	26.66%
Stratford	950	181	0	150	0	50	21.66%
Stratham	6,880	2,760	0	0	0	2,109	43.32%
Sugar Hill-R	630	Not Available	0	0	0	0	Not Available
Sullivan - NF	810	Not Available	0	0	0	0	Not Available
Sunapee RF	3,260	1,731	0	1,805	60	777	32.59%
Surry - NF	730	Not Available	0	0	0	0	Not Available
Sutton	1,740	327	0	102	50	209	44.25%
Swanzey	7,150	1,115	125	342	12	797	39.48%
Tamworth	2,650	743	0	250	0	589	44.23%
Temple - R	1,480	Not Available	0	0	0	0	Not Available
Thornton-RH	1,960	2,364	0	413	0	597	20.16%
Tilton	3,760	5,953	0	20	0	93	1.54%
Troy	2,030	189	0	163	0	223	54.15%
Tuftonboro	2,360	902	0	167	0	312	25.68%
Unity	1,670	191	2,200	74	0	219	8.40%
Wakefield-RH	4,750	1,871	0	561	21	798	30.45%
Walpole	3,750	750	0	159	9	574	43.74%
Warner	3,000	2,040	0	30	30	558	22.39%
Warren	930	500	0	150	0	184	26.94%
Washington	990	458	0	268	5	216	32.47%
Waterville Valley	270	932	0	264	47	90	12.84%
Weare	8,640	3,774	0	0	0	821	17.87%



Town	2005 NH Population (NH OEP)	2005 Residential MSW Tons/Year	2005 Commercial and Industrial Tons/Year	2005 Const & Demo tons/yr	2005 Composting tons/yr	2005 Recycling tons/yr	2005 Recycling Rate
Webster	1,800	844	0	0	0	0	0.00%
Wentworth	860	275	0	142	0	0	0.00%
Westmoreland	1,880	101	0	0	0	0	0.00%
Whitefield	2,010	328	0	161	0	0	0.00%
Wilmot	1,240	601	0	156	0	160	21.01%
Wilton-R	4,020	807	0	0	0	824	50.51%
Winchester	4,320	1,160	0	430	23	445	28.74%
Windham	12,340	4,380	0	1,200	80	1,903	31.16%
Windsor-R	230	Not Available	0	1,201	0	0	Not Available
Wolfeboro	6,620	1,800	330	1,737	23	1,141	35.33%
Woodstock-R	1,180	Not Available	0	0	0	0	Not Available
STATE TOTALS	1,317,800	584,679	81,355	98,398	22,892	124,731	18.14%

Notes:

1. "R" and "RH" indicate towns are part of a regional cooperative or district. Only the primary facility normally will report.
2. "NF" indicates the town has no facility. In some cases, the town may collect leaf and yard waste for composting.
3. "NA" indicates the town was reported but as part of a cooperative or district
4. "Failure to Report" indicates that a town failed to submit an Annual Facility Report as required by the town's permit to operate.
5. Construction and Demolition Debris is not considered to be recycled by the municipality. Rather, it is counted as commercial recycling. Municipalities either send their C&D to a recycler or to a disposal facility directly. It is not possible to account for the amount of material that is actually recycled by each municipality.